

PYCNOGONIDA OF THE WESTERN
PACIFIC ISLANDS, VII.
ON SOME RARE SPECIES FROM THE
FLORES SEA, INDONESIA

K. Nakamura and C. Allan Child

Abstract.—During a fisheries research cruise by the Japanese fisheries research vessel *Hakuho Maru*, in the Flores Sea, Indonesia, a joint cruise with LON-LIPI, Indonesia, WESTPAC, IOC-UNESCO, and the Ocean Research Institute of the University of Tokyo, two trawling stations resulted in the capture of several rare species of pycnogonids. Two of these species were taken only for the second time since their original descriptions in 1908; *Bathyzetes setiger* (Loman), and *Ascorhynchus levissimus* Loman. They are refigured and discussed in light of current morphological knowledge. Three other species rare in literature were taken and are discussed; *Hemichela micrasterias* Stock, *Pallenopsis tydemani tydemani* Loman, and *Colossendeis leptorhynchus* Hoek, while the cosmopolitan species *C. macerrima* Wilson was also taken. *Pigrogromitus timanus* Calman, collected at a shore station near the Celebes, has also been included.

During the course of joint research cruise KH-85-1 in the Flores Sea, Indonesia, involving LON-LIPI, Indonesia, and WESTPAC, IOC-UNESCO with the vessel *Hakuho Maru*, Ocean Research Institute of the University of Tokyo, two trawl stations were made in about 600 meters which resulted in the capture of five rare or little known pycnogonids. Two of these species, *Ascorhynchus levissimus* Loman and *Bathyzetes setiger* (Loman), were taken only for the second time since their description in 1908. Three other species, *Hemichela micrasterias* Stock, *Pallenopsis tydemani tydemani* Loman, and *Colossendeis leptorhynchus* Hoek, have few specimens recorded in literature and are thus relatively rare. The very common *Colossendeis macerrima* Wilson was also captured at one of the stations. This frequency of capture suggests a rich faunal assemblage, particularly from so few stations. This richness is in keeping with the literature of Indonesian pycnogonids which has, since the first large monograph by Lo-

man in 1908, consistently proved that there are great numbers of pycnogonid species and specimens to be found in this huge archipelago.

Stock (1953) recorded additional pycnogonid fauna in his Indonesia-Philippine report and there have been other Indonesian faunal listings in subsequent reports on that region (Stock 1954, 1968, 1983, 1985). The rarity of the many species known to inhabit Indonesia may be in part due to the past minimal collecting frequency for the whole archipelago, particularly in the deeper slope and basin areas of its various seas.

The distribution pattern of the two rarest species, known from their two captures only, is, of course, central Indonesia. That of *Hemichela micrasterias* is along a corridor from Indonesia to central Japan, including the Philippines. The distribution of *Pallenopsis t. tydemani* is only known from Indonesia and Japan, from 100 to 800 meters. Members of the genus *Colossendeis* have usually been found to be cosmopolitan in

deep waters. This may hold true for *C. leporhynchus* which is known from the Atlantic and Pacific Oceans and is certainly true for *C. macerrima*. Another cosmopolitan or at least pantropical species, *Pigrogromitus timsanus* Calman, was taken incidentally at a shore station just prior to the Flores Sea stations.

Systematics

Family Ammotheidae

Genus *Ascorhynchus* Sars

Ascorhynchus levissimus Loman

Fig. 1A–D

Ascorhynchus levissimus Loman, 1908:33–34, pl. IV, figs. 46–51.—Stock, 1953:304 [key]; 1975:130 [text].

Material examined.—Flores Sea: 05°56.0'S, 119°29.0'E, 630–657 m, sta. KH85-1, B-1, 12 Feb 1985 (1 ♀).

Distribution.—This is the second specimen of this species known since Loman described the first, also from the Flores Sea (07°24'S, 118°15.2'E). His specimen was from slightly deeper water, 794 m. It is thus confined, to our knowledge, to the Flores Sea, but since the entire archipelago is so rarely collected, particularly its deeper slopes and basins, the species may have a wider distribution when other collections from adjacent slopes and basins become known.

Remarks.—From examination of the above specimen, Loman's type specimen also appears to be a female, judging from the oviger sixth segment which lacks the usual tuft of setae common to males of the larger species of *Ascorhynchus*. The ocular tubercle is less a broadly rounded hump than in Loman's type figures. In the *Hakuho Maru* specimen, it is more abbreviated with its anterior surface joined to the neck at a sharper angle and it has unpigmented eyes which are readily discernible, at least in their upper halves.

The only other major difference between the two specimens is that the anterior pair

of propodal claws in this specimen are tiny triangular points not as long as the propodal diameter. In Loman's figure of the entire specimen (pl. IV, fig. 48), the propodal claws are indistinctly illustrated as approximately equal in size. The remaining six claws of the specimen in hand are about 0.3 the propodal length and the tarsus and propodus of each are almost equal in length. A set of figures are provided herein as the type figures are somewhat diagrammatic and do not provide details of currently recognized critical characters.

This giant species was inadvertently omitted from a recent key (Child 1987:906–907) to the very large species of this genus. It can be followed to couplet three, second part, where it would be listed as having a tarsus equal to or slightly longer than the propodus, a very shortened propodal claw on the first pair of legs, and a second scape segment longer than the first, both of which form the chelifore, along with a tiny chela of very reduced size.

Genus *Bathyzetes* Stock, 1955

Bathyzetes setiger (Loman, 1908)

Fig. 1E–G

Eurycyde setigera Loman, 1908:29–30, pl. V, figs. 52–58.

Bathyzetes setiger.—Stock, 1955:261, 262 [key], fig. 24.

Material examined.—Flores Sea: 05°54.9'S, 119°29.5'E, 558–593 m, sta. KH85-1, B-2, 12 Feb 1985 (1 ♀).

Distribution.—This record, like the last one, marks only the second time this species has been collected, but like other species in this report, it is possibly not as rare as the frequency of collections from deeper Indonesian seas. Loman's four type specimens came from further north, in the Molucca Sea, off northeastern Sulawesi (Celebes) Island, in 1165–1264 meters. This second capture extends its distribution south into the Flores Sea, and into shallower waters at a minimum depth of 558 meters.

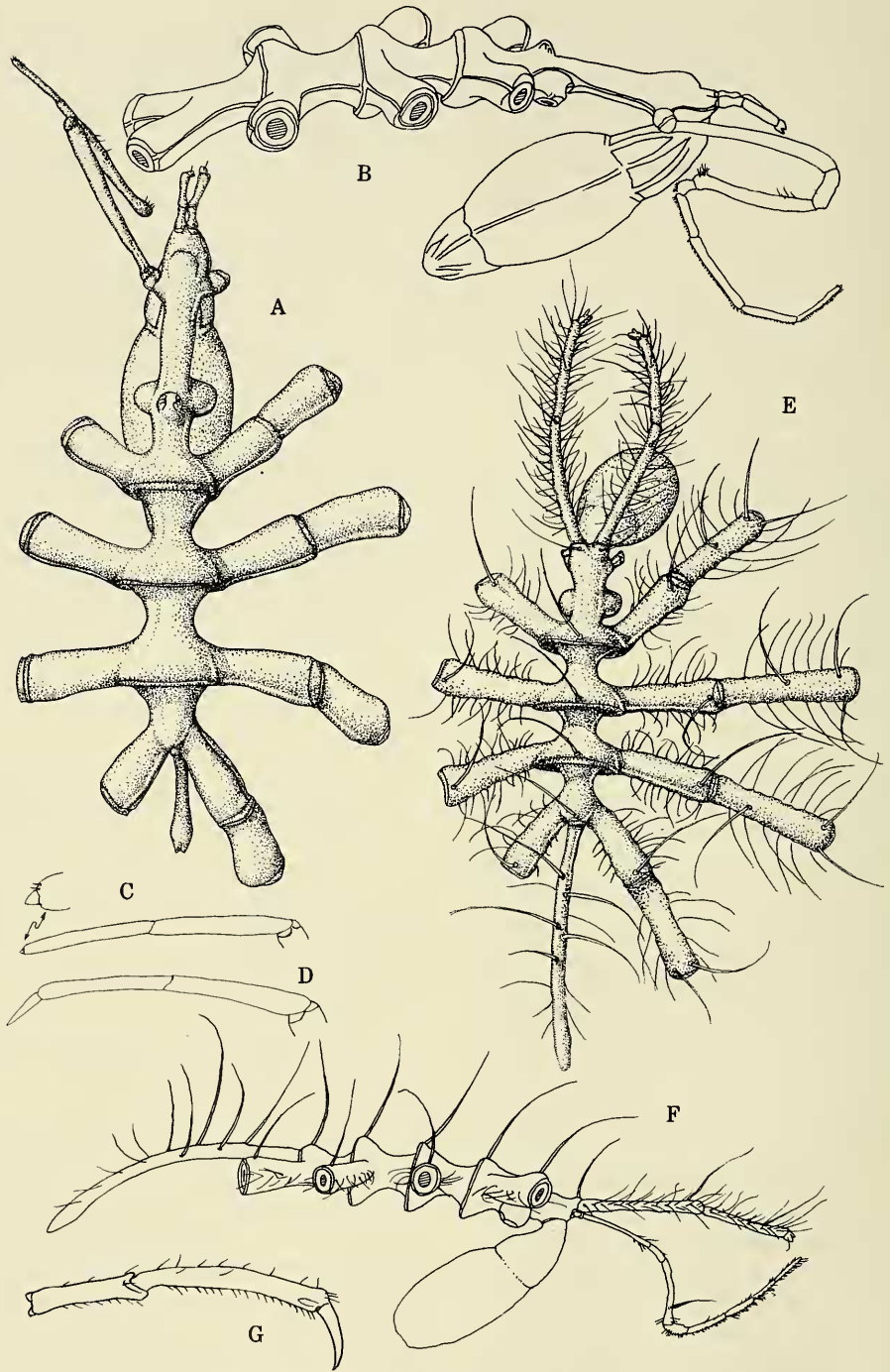


Fig. 1 *Ascorhynchus levissimum* Loman, female: A, Trunk, dorsal view; B, Trunk, lateral view; C, Terminal segments of first leg, with terminal claw enlarged; D, Terminal segments of fourth leg. *Bathyzetes setiger* (Loman), female: E, Trunk, dorsal view; F, Trunk, lateral view; G, Terminal segments of third leg.

Remarks.—Thanks to J. H. Stock, Institute for Taxonomic Zoology, University of Amsterdam, we were permitted to examine Loman's syntypes of this species and of *B. virago* (Loman). The two species are very closely related and could be synonymized except for the differences in size, setae size and arrangement, palp segment length ratios, and differences in the strigilis segments of the oviger. Loman's *B. setiger* is twice the size of *B. virago*, a difference which is not a valid species diagnostic character in itself (e.g., the great size differences in specimens of *Anoplodactylus lentus* Wilson). *Bathyzetes setiger* has a seventh palp segment longer than the eighth while this segment is shorter than the eighth in *B. virago*.

As Stock (1955:262, fig. 24) illustrated the terminal oviger segments differ in the two species. *B. setiger* has a longer terminal claw extending well beyond the enlarged distal denticulate spine, while the claw of *B. virago* is hardly longer than the denticulate spine with which it is paired. In the two specimens we examined from the type series, *B. virago* appears notably more setose with many more long slender setae on the chelifores and legs than in *B. setiger*. The above female agrees in most all characters with *B. setiger* except that it appears to have even fewer setae than the syntype. The very long dorsodistal setae of the trunk and lateral processes are even more prominent with fewer short setae around each. It would be difficult to confuse either of these setose species with a species of another genus, particularly with the absence of any form of ocular tubercle on either of the *Bathyzetes* species.

Genus *Hemichela* Stock, 1954

Hemichela micrasterias Stock

Hemichela micrasterias Stock, 1954:90–94, figs. 42–43; 1985:153–155, figs. 1–11.—Staples, 1982:464–465 [text].—Child, 1988a:10.—Nakamura & Child (1990).

Material examined.—Flores Sea: 05°56.0'S, 119°29.0'E, 630–657 m, sta. KH85-1, B-1, 12

Feb 1985 (1 subadult); 05°54.9'S, 119°29.5'E, 558–593 m, sta. KH85-1, B-2, 12 Feb 1985 (1 ovig ♀ 1, juv).

Distribution.—This species was originally described from one Indonesian specimen and has recently been recorded from the Philippines (Child 1988a:10) and Japan (Nakamura & Child 1990). This distribution more or less follows a corridor theory (Child 1983:699, 713, 1988b:55) proposed as relating western Pacific species distributions to a pathway extending from at least as far south as New Zealand to as far north as the Japanese Islands. The known distribution of several genera (*Austrodecus*, *Hemichela*, *Cheilopallene*, and others) and a number of species (this species being one example) appear to follow the western Pacific island archipelagoes north and south, presumably in accordance with north–south current trends among these islands. The previously known depths at which this species was taken were 20–84 meters, but the above specimens are the first from much greater depths; 558–657 meters.

Remarks.—This genus is closely related to *Paranymphon* in most characters except for the loss in adults of the immovable chelae fingers and a few other differences in less conspicuous characters. The lateral process tubercles, for instance, are very similar in the two genera but the tubercles, for *Hemichela*, are much larger in these specimens from the Flores Sea than those illustrated by Stock (1954:91, fig. 42a) for the type. They are at least equal in length to or even larger than the tubercles of *P. spinosum* Caullery, and much taller than those of *P. magnidigitatum* Hong & Kim (1987). Both genera have lateral dendritic spines or tubercles on the anterior and posterior of their lateral processes, at least in the male, and have very tall ocular tubercles and abdomina.

The above specimens have no suggestion of eyes, in keeping with their deeper water habitats, and their ocular tubercles are much more slender distally, with prominent lat-

eral sensory papillae. The ocular tubercle of Stock's type specimen is distally broader and has darker areas suggesting eyes.

The chelae develop their single finger aspect very late in the subadult stage. The juvenile has two well-developed chela fingers on each chelifore with teeth equal to those of the type specimen. The subadult from station B-1 has fully formed ovigers but an immovable finger is still present on both chelae, but it is reduced in size relative to the movable finger. Only in adults with fully developed sexual characters is the immovable finger missing or fully atrophied.

Family Callipallenidae Hilton

Genus *Pigrogromitus* Calman, 1927

Pigrogromitus timsanus Calman

Pigrogromitus timsanus Calman, 1927:408–410, fig. 104a–f.—Child, 1988a:21 [literature].

Material examined.—Sulawesi (Celebes) Island: Samalona Island, just off Ujung Pandang (Makassar), coll. Dr. T. Miura, 2 m, 8 Feb 1985 (1 ♂).

Distribution.—This species is pantropical and in the Indo-Pacific, follows a north-south distribution from Australia through the island archipelagoes to at least as far north as the Ryukyu Islands. It has only been taken in shallow localities.

Genus *Pallenopsis* Wilson, 1881

Subgenus (*Bathypallenopsis*) Stock, 1975

Pallenopsis (Bathypallenopsis)
tydemani tydemani Loman

Pallenopsis tydemani Loman, 1908:65–66, pl. 10, figs. 139–145.—Hedgpeth, 1949:277, fig. 36i, j.—Utinomi, 1951:160; 1971:323.

Pallenopsis (Bathypallenopsis) tydemani tydemani.—Stock, 1975:1032 [text], fig. 31c, 1035–1036 [text].

Material examined.—Flores Sea: 05°54.9'S, 119°29.5'E, 558–593 m, sta. KH85-1, B-2, 12 Feb 1985 (1 ♀).

Distribution.—This is another species represented in Loman's pioneering monograph on the Indonesian fauna. He originally described it from specimens taken in the Flores Sea in 694 and 794 m, and it has since been collected off Kyushu and Honshu Islands in Japan in about 800 and 100–200 m respectively. This female was collected just northeast of the syntypes.

Remarks.—The specimen has only one leg which survived the rigors of the trawl, but the ovigers are much like those figured by Stock (1975:1033, fig. 31c) of the syntype.

There are apparently only six specimens of this species recorded in the literature, making it another rarity, but it is adequately figured by Hedgpeth, Loman, and Stock.

Family Colossendeidae Hoek

Genus *Colossendeis* Jarzynsky

Colossendeis leptorhynchus Hoek, 1881

Colossendeis leptorhynchus Hoek, 1881:64–65, pl. VIII, figs. 3–7.—Stock, 1978:402, 406–408, fig. 21; 1981:454–455; 1983:299–300; 1986:417.

Colossendeis pennata Pushkin, 1970:1490–1492, fig. 2.

Material examined.—Flores Sea: 05°56.0'S, 119°29.0'E, 630–657 m, sta. KH85-1, B-1, 12 Feb 1985 (1 ♀); 05°54.9'S, 119°29.5'E, 558–593 m, sta. KH85-1, B-2, 12 Feb 1985 (1 ♀).

Distribution.—This species is found in predominantly Southern Hemisphere deep-water localities and could be cosmopolitan in distribution if enough specimens were known from a few other collecting sites. It has not been taken yet in the Indian Ocean, for instance. Hoek's types were taken from off Valpariso, Chile, and the species has been taken in the Walvis Basin off southern Africa, in Indonesia, the Philippines, and the Caribbean Basin in depths of 531–3675 m.

Remarks.—The tarsus of the species and these specimens is almost twice the propodal length and the sixth palp segment is

very slightly shorter than the slender seventh. The seventh segment is slightly longer than the combined length of the terminal three segments. The tarsus is notably long in this species, longer than that of its nearest relation, *C. macerrima* Wilson, but the terminal claw is longer than described for the syntype by Stock (1978:402). The claws of the above specimens are less than four times shorter than the propodus while those described by Stock are slightly more than six times shorter. All of these characters, except for claw length, conform to Stock's description of Hoek's syntypes and tend to reinforce the separation of this species from others with which it has been synonymized in the past.

Colossendeis macerrima Wilson, 1881

Colossendeis macerrima Wilson, 1881:246–247, pl. I, figs. 9–12, pl. V, fig. 32.—Fry & Hedgpeth, 1969:53, figs. 7, 8 [literature].—Stock, 1978:400–401, fig. 2M.

Colossendeis villegentei A. Milne-Edwards, 1881:933.

Colossendeis leptorhynchus var. *septentrionalis* Caullery, 1896:362–363.

Material examined.—Flores Sea: 05°54.9'S, 119°29.5'E, 558–593 m, sta. KH85-1, B-2, 12 Feb 1985 (1 ♀).

Distribution.—This is a cosmopolitan deep-water species found from about 400 to almost 4000 m.

Remarks.—This is another species with a very long slender proboscis which is usually slightly upturned distally. The third segment of the palp, as emphasized by Stock (1978:400–401), is notably shorter than the fifth segment, shorter in this ratio than with any other related species. Palp segments 6 and 7 are not as long as in *C. leptorhynchus*, and are approximately equal in length while lacking the slender proportions of Hoek's species. The two species are otherwise difficult to separate as they tend to be of similar sizes along with having slender proboscides, the most immediately obvious character of

the species. The comparative figures given by Stock (1978:fig. 2) are excellent for separating these two species along with *C. cucurbita* Cole.

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(KN) Faculty of Education, Yokohama National University, 156 Tokiwadai, Hodogaya-ku, Yokohama 240, Kanagawa Prefecture, Japan; (CAC) Department of Invertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560.